Yakeen NEET 2.0 2026

Practice Sheet

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Basic Maths and Calculus(Mathematical Tools)

Q1 Find the value of $(64)^{2/3}$
(1) 4   (2) 16
(3) 32   (4) 64

Q2 If $\cos\theta = \frac{4}{5}$ then find the value of $\tan\theta$
(1) $\frac{4}{5}$ (2) $\frac{3}{5}$
(3) $\frac{4}{3}$ (4) $\frac{3}{4}$

Q3 If $y = \sin 2\theta$ then find 'θ' where y will be maximum:
(1) 90°   (2) 60°
(3) 45°   (4) 32°

Q4 Find the values of:
(i) $\tan(-30°)$
(ii) $\cos 150°$
(iii) $\sin 210°$
(1) $\frac{1}{\sqrt{3}}, \frac{\sqrt{3}}{2}, \frac{1}{2}$ (2) $-\frac{1}{\sqrt{3}}, -\frac{\sqrt{3}}{2}, -\frac{1}{2}$
(3) $-\frac{1}{\sqrt{3}}, \frac{\sqrt{3}}{2}, \frac{1}{2}$ (4) $-\frac{1}{\sqrt{3}}, \frac{\sqrt{3}}{2}, -\frac{1}{2}$

Q5 Find value of $\frac{10^{-4}}{8}$
(1) 1.25×10^{-5}
(2) 1.25×10^{-4}
(3) 1.25×10^{-3}
(4) 1.25×10^{-6}

Q6 Calculate $\frac{9/8}{6/5}$
(1) $\frac{16}{15}$ (2) $\frac{15}{16}$
(3) $\frac{5}{16}$ (4) $\frac{27}{20}$

Q7 $\int_0^1 e^x dx$
(1) e^x (2) 1
(3) 0   (4) $e - 1$

Q8 Find the value of $(1 + x)^3$, if $x << 1$.
(1) $1 + x$

(2) $1 - 3x$
(3) $1 + 3x$
(4) $1 - 3x + 3x^2 + x^3$

Q9 The slope of straight line $\sqrt{3}y = 3x + 4$ is
(1) 3   (2) $\sqrt{3}$
(3) $\frac{1}{\sqrt{3}}$ (4) $\frac{1}{3}$

Q10 Find the value of integral $\int_0^{\pi/2} \cos x\, dx$
(1) 0   (2) 1
(3) -1   (4) 2

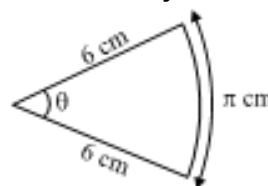**Q11** Convert the following angles from radian to degree
(a) $\frac{3\pi}{4}\mathrm{rad}$
(b) $\frac{7\pi}{6}\mathrm{rad}$
(1) 135°, 210°
(2) 210°, 135°
(3) 225°, 240°
(4) 135°, 225°

Q12 $\frac{d}{dx}\left(e^{100}\right) = \ldots..$
(1) e^{100}
(2) 0
(3) 100
(4) 1

Q13 A circular arc is of length π cm. Find angle subtended by it at the centre.

(1) 60°   (2) 30°
(3) 90°   (4) 15°

Q14 Evaluate $\int \frac{dx}{\sqrt[3]{x}}$

(1) $\frac{3}{2}x^{-2/3} + c$

(2) $\frac{2}{3}x^{-3/2} + c$

(3) $\frac{2}{3}x^{3/2} + c$

(4) $\frac{3}{2}x^{2/3} + c$

Q15 $\log 25 + \log 4 - \log 5$ is equal to

(1) $\log 20$　　　　　(2) $\log 25$

(3) $\log 15$　　　　　(4) $\log 10$

Q16 If $y = \frac{1}{2}\sin(x^2)$, $\frac{dy}{dx}$ will be:

(1) $\frac{1}{2}\cos(x^2)$

(2) $x\cos(x^2)$

(3) $\cos(x^2)$

(4) $\sin(x)$

Q17 If acceleration due to gravity g at height $h \ll R$ (where R is radius of earth) is

$g_h = g_0\left(1 + \frac{h}{R}\right)^{-2}$, then using binomial theorem which is **correct**?

(1) $g_h = g_0$

(2) $g_h = g_0\left(1 - \frac{2h}{R}\right)$

(3) $g_h = g_0\left(1 + \frac{2h}{R}\right)$

(4) $g_h = g_0\left(1 - \frac{h}{2R}\right)$

Q18 If x+y = 8, then what will be the maximum value of xy ?
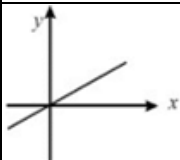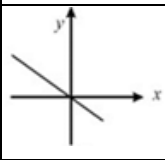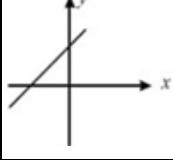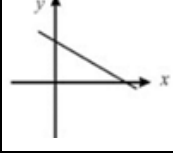
(1) 8　　　　　(2) 16

(3) 20　　　　　(4) 24

Q19 The area of the region between the given curve $y = 4x^3$ and the x–axis on the interval [0, 1] is:

(1) 2 unit　　　　　(2) 0

(3) 3 unit　　　　　(4) 1 unit

Q20 If $y = \log_e x + \sin x + e^x$, then $\frac{dy}{dx}$ is:

(1) $\frac{1}{x} + \sin x + e^x$

(2) $\frac{1}{x} - \cos x + e^x$

(3) $\frac{1}{x} + \cos x + e^x$

(4) $\frac{1}{x} - \sin x$

Q21 Match the graph in List-II corresponding to the equations given in List I

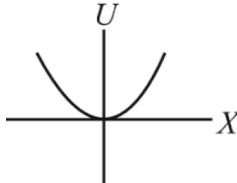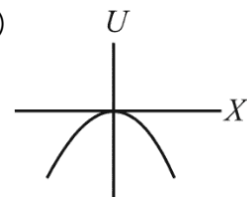|	List I		List II
(i).	$y = 4x$	(a)	
(ii).	$y = -6x$	(b)	
(iii).	$y = x + 4$	(c)	
(iv).	$y = -2x + 4$	(d)	

Choose the **correct** option from the codes given below

(1) i-(b), ii-(c), iii-(d), iv-(a)

(2) i-(a), ii-(d), iii-(b), iv-(c)

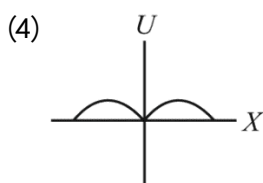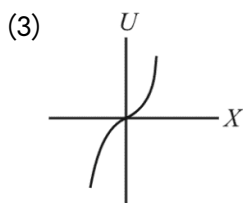(3) i-(b), ii-(c), iii-(a), iv-(d)

(4) i-(a), ii-(b), iii-(c), iv-(d)

Q22 Evaluate $\int \left(x^2 - \cos x + \frac{1}{x}\right)dx$

(1) $x^3 - \sin x + \ln(x) + c$

(2) $2x - \sin x + \ln(x) + c$

(3) $\frac{x^3}{3} + \sin x + \ln(x) + c$

(4) $\frac{x^3}{3} - \sin x + \ln(x) + c$

Q23 A body is attached to a spring whose other end is fixed. If the spring is elongated by x, its potential energy is $U = 5x^2$, where x is in metre and U is in joule. $U - x$ graph is

(1)

(2)

(3)

(4)

Q24 If $y^2 - 2y - 3 = 0$, then find the value of y.
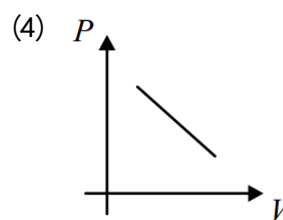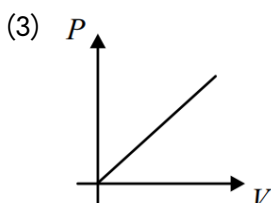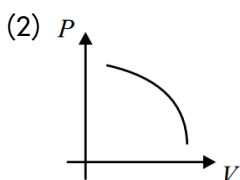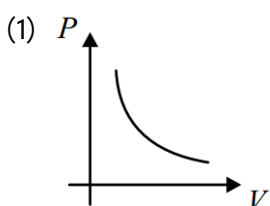
(1) 3, 1

(2) –3, –1

(3) 3, –1

(4) –3, 1

Q25 Find $1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} + \frac{1}{16} - \frac{1}{32} + \ldots\ldots\infty$

(1) 2   (2) 1

(3) 2/3   (4) ∞

Q26 The equation of a curve is given as

$y = x^2 + 2 - 3x$. The curve intersects the y-axis at:

(1) (0, 1)   (2) (2, 0)

(3) (0, 2)   (4) (1, 0)

Q27 P-V graph for ideal gas at constant temperature(T) is [Given ideal gas equation PV =nRT]
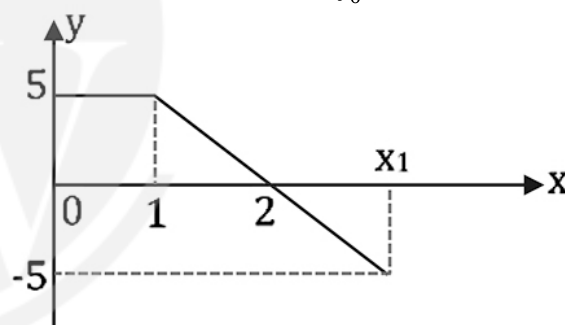
(1)

(2)

(3)

(4)

Q28 Choose the **correct** statement(s) among the following.

(I) The integral $\int_1^5 x^2 \, dx$ is equal to $\frac{124}{3}$

(II) The value of $(\sin 180° + \cos 90°)^2$ is 1

(III) Slope of straight line $\frac{x}{2} - \frac{y}{4} = 1$ is 2.

(1) Only I

(2) I and II

(3) I, II and III

(4) I and III

Q29 Find the value of $\log_{10} 1000 - \log_{10} 100 = $ _____?

(1) 3   (2) 2

(3) 1   (4) 10

Q30 Find the value of x_1, so that $\int_0^{x_1} y dx = 5$

(1) 2   (2) 7

(3) 3   (4) 5

Q31 Match the List I with List II to find out the **correct** option

	List I		List II
(i).	$\log_e 125 + \log_e 4 - 2\log_e 5$	(a)	1
(ii).	$\log_e 16$	(b)	$\log_e 20$
(iii).	$\log_{10} 10$	(c)	$4 \log_e 2$
(iv).	$\log_2 16$	(d)	4

Choose the **correct** option from the codes given below

(1) i-(b), ii-(a), iii-(c), iv-(d)

(2) i-(a), ii-(b), iii-(c), iv-(d)

(3) i-(b), ii-(c), iii-(a), iv-(d)

(4) i-(d), ii-(a), iii-(b), iv-(c)

Q32 **Assertion :** Distance between two points (1, 2, 3) and (1,6,6) is 5 units.

Reason : The distance between two points (x_1, y_1, z_1) and (x_2, y_2, z_2) is given by the formula : $r =$

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

(1) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(2) Both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(3) Assertion is correct, but Reason is incorrect.

(4) Assertion is incorrect, but Reason is correct.

Q33 If $B_{\text{axis}} = B_{\text{centre}} \left(\dfrac{R^3}{(R^2 + x^2)^{3/2}} \right)$, then find

$\dfrac{B_{\text{axis}}}{B_{\text{centre}}}$ if $x << R$

(1) $\left[1 - \dfrac{3}{2} \dfrac{x^2}{R^2} \right]$

(2) $\left[1 + \dfrac{3}{2} \dfrac{x^2}{R^2} \right]$

(3) $\left[1 + \dfrac{3}{2} \dfrac{x}{R} \right]$

(4) $\left[1 - \dfrac{3}{2} \dfrac{x}{R} \right]$

Q34 **Statement I**- As θ increases, the value of $\cos \theta$ also increases ($0° \leq \theta \leq 90°$)

**Statement II** - For a very small angle θ, $\sin \theta \simeq \theta$

(1) Statement I is correct but Statement II is incorrect.

(2) Statement I is incorrect but Statement II is correct.

(3) Both Statement I and Statement II are correct.

(4) Both Statement I and Statement II are incorrect.

Q35 Magnitude of slope i.e., steepness of graph shown in figure
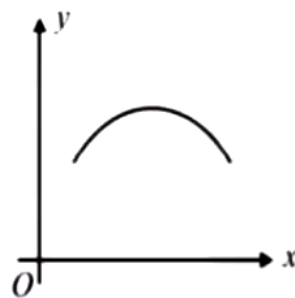
(1) First increase and then decreases

(2) First decreases and then increases

(3) Decreases continuously

(4) Increases continuously

Q36 The slope of $v - t$ is zero at point
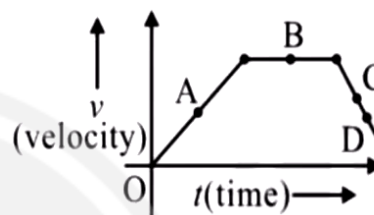
(1) A

(2) B

(3) C

(4) D

Q37 The radius r of spherical bubble is changing with time t. The rate of change of its volume is given by:

(1) $4\pi r^2 \dfrac{dr}{dt}$

(2) $\dfrac{4}{3}\pi r^2$

(3) $\dfrac{8}{3}\pi r^2$

(4) $\dfrac{8}{3}\pi r \dfrac{dr}{dt}$

Q38 Sound intensity level (in decibel) is given by the formula, $\beta = 10 \log \dfrac{I}{I_o}$. Here given that $I = 2 \times 10^2 \, W/m^2$ and $I_o = 2 \times 10^{-12} \, W/m^2$. Calculate β

(1) 10

(2) 140

(3) 14

(4) 130

Q39 Find approximate value of: $(1.005)^{12}$

(1) 1.005

(2) 1.060

(3) 1.025
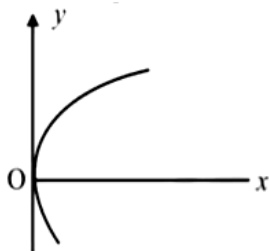
(4) 1.020

Q40 $\sqrt{1 + \sin \theta}$ is equal to

(1) $(\sin \theta + \cos \theta)$

(2) $\sin \theta - \cos \theta$

(3) $\sin \frac{\theta}{2} + \cos \frac{\theta}{2}$

(4) $\sin \frac{\theta}{2} - \cos \frac{\theta}{2}$

Q41 At $x = 0$, the value of slope is

(1) 0

(2) 1

(3) –1

(4) Infinite

Q42 The minimum value of $y = 5x^2 - 2x + 1$ is

(1) 1/5

(2) 2/5

(3) 4/5

(4) 3/5

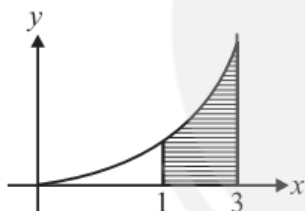**Q43** If $\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta} = \frac{7}{3}$ then find $\tan \theta$?

(1) $\frac{3}{5}$

(2) $\frac{5}{2}$

(3) $\frac{5}{3}$

(4) $\frac{2}{5}$

Q44 Find the area under the shaded region for curve $y = 3x^2$.

(1) 80

(2) 26

(3) 20

(4) 40

Q45 $y = 2u^3, u = 8x - 1$. Find $\frac{dy}{dx}$

(1) $48(8x - 1)^2$

(2) $48(8x + 1)^2$

(3) $48(8x - 1)$

(4) $48(8x + 1)$

Answer Key

Q1	(2)		Q24	(3)
Q2	(4)		Q25	(3)
Q3	(3)		Q26	(3)
Q4	(2)		Q27	(1)
Q5	(1)		Q28	(4)
Q6	(2)		Q29	(3)
Q7	(4)		Q30	(3)
Q8	(3)		Q31	(3)
Q9	(2)		Q32	(1)
Q10	(2)		Q33	(1)
Q11	(1)		Q34	(2)
Q12	(2)		Q35	(2)
Q13	(2)		Q36	(2)
Q14	(4)		Q37	(1)
Q15	(1)		Q38	(2)
Q16	(2)		Q39	(2)
Q17	(2)		Q40	(3)
Q18	(2)		Q41	(4)
Q19	(4)		Q42	(3)
Q20	(3)		Q43	(2)
Q21	(4)		Q44	(2)
Q22	(4)		Q45	(1)
Q23	(1)			

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